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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/583,748	05/31/2000	Kouichiro Kitagawa	43888-071	4145

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WASHINGTON, DC 20005-3096

EXAMINER

RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 04/25/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/583,748

Applicant(s)

KITAGAWA ET AL.

Examiner

Basia Ridley *BR*

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4. 6) ☐ Other: .

DETAILED ACTION

Information Disclosure Statement

1. The European Search Report cited in the information disclosure statement filed in Paper 4 has been considered, but will not be printed on any patent resulting from this application.
2. The information disclosure statement filed on 15 December 2000 as Paper 4 fails to comply with the provisions of 37 CFR 1.98(a) and 37 CFR 1.98(b) for the reasons set forth below. It has been placed in the application file, but the following document(s) referred to therein has/have not been considered as to the merits, unless the references have been cited by the examiner on form PTO-892:
 - 1,319,191 is not a US Patent Document, and it is not identified by country or patent office which issued the patent or published the application.

Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609 ¶ C(1).

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claim(s) 3 is/are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Claim 3 recites the limitation "said inert gas or water vapor" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim(s) 1-2 and 4 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Cheng (USP 4,855,267).

Regarding claim 1-2 and 4, Cheng discloses a fuel reforming apparatus comprising:

- reforming unit equipped with reforming catalyst (abstract);
- a heater for heating said reforming unit (C1/L45-60);
- a recovering gas supply unit for supplying an inert gas or water vapor to said reforming unit (C1/L45-60 and C2/L4-11);
- a sensor for detecting a concentration of hydrogen gas (C2/L30-62).

Regarding limitations recited in claim 1-2 and 4 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

Instant claim(s) 1-2 and 4 structurally read(s) on apparatus of Cheng.

7. Claim(s) 1-2 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Yamauchi et al. (USP 4,147,660).

Regarding claim 1, Yamauchi et al. discloses a fuel reforming apparatus comprising:

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- reforming unit equipped with reforming catalyst (C1/L1-C2/L20).

While Yamauchi et al. does not explicitly disclose a heater for heating said reforming unit, as steam reforming and catalyst regeneration using steam are endothermic reactions, the disclosed apparatus will inherently include a heater.

Regarding claim 2, Yamauchi et al. discloses all of the claim limitations as set forth above, additionally the reference discloses:

- a recovering gas supply unit for supplying an inert gas or water vapor to said reforming unit (C1/L1-C2/L20).

Regarding limitations recited in claim 1-2 which are directed to a manner of operating disclosed fuel reforming apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

Instant claim(s) 1-2 structurally read(s) on apparatus of Yamauchi et al.

8. Claim(s) 1-2 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Autenrieth et al. (EP 0 884 271).

Regarding claim 1, Autenrieth et al. discloses a fuel reforming apparatus comprising:

- reforming unit equipped with reforming catalyst (C2/L50-C3/L9).

While Autenrieth et al. does not explicitly disclose a heater for heating said second embodiment of said reforming unit, as steam reforming is an endothermic reactions, the disclosed apparatus will inherently include a heater.

Regarding claim 2, Autenrieth et al. discloses all of the claim limitations as set forth above, additionally the reference discloses:

- a recovering gas supply unit for supplying an inert gas or water vapor to said reforming unit

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(C3/L27-33).

Regarding limitations recited in claim 1-2 which are directed to a manner of operating disclosed fuel reforming apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

Instant claim(s) 1-2 structurally read(s) on apparatus of Autenrieth et al.

9. Claim(s) 1 and 5 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Okada et al. (USP 5,302,470).

Regarding claim 1 and 5, Okada et al. discloses a fuel reforming apparatus comprising:

- reforming unit equipped with reforming catalyst (abstract);
- a heater for heating said reforming unit (C2/L42-46);
- a desulfurizer for removing a sulfide from raw materials (C2/L61-C2/L30);

Regarding limitations recited in claim 1 and 5 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

Instant claim(s) 1 and 5 structurally read(s) on apparatus of Okada et al.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claim(s) 3 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (USP 4,855,267).

Regarding claim 3, Cheng discloses all of the claim limitations as set forth above, but the reference does not explicitly disclose said apparatus comprising thermometer for detecting a temperature of said reforming catalyst. As Cheng discloses that it is necessary to monitor and control the temperature of the reformer at various stages of the process (C1/L45-C2/L11), said apparatus will inherently comprise a temperature sensor. While no specific temperature sensors are disclosed, as the instant specification is silent to unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any known temperature sensor in apparatus of Cheng, for example thermometer, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result.

Regarding limitations recited in claim 3 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

12. Claim(s) 5 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheng (USP 4,855,267) or Autenrieth et al. in view of Okada et al. (USP 5,302,470).

Regarding claim 5, Cheng or Autenrieth et al. disclose all of the claim limitations as set forth above, but the references do not explicitly disclose said apparatus comprising a desulfurizer for removing a sulfide from raw materials.

Okada et al. teaches that it is desirable to remove even trace amounts of sulfur from the reformer feedstock for the purpose of extending life of the reforming catalyst (C1-C4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a desulfurizer for removing a sulfide from raw materials in the reformer of Cheng or Autenrieth et al., as taught by Okada et al., for the purpose of improving system economics by allowing processing of various raw materials, even ones which include sulfur, and by increasing the time between required catalyst regenerations.

Regarding limitations recited in claim 5 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

13. Claim(s) 3 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamauchi et al. (USP 4,147,660) or Autenrieth et al. (EP 0 884 271) or Okada et al. (USP 5,302,470).

Regarding claim 3, the references disclose all of the claim limitations as set forth above, but the reference does not explicitly disclose said apparatus comprising thermometer for detecting a temperature of said reforming catalyst. The examiner takes official notice that it was known in the art at the time of the invention to monitor and control the temperature of the reformer at various stages of the process, and therefore said apparatus will inherently comprise a temperature sensor. While no specific temperature sensors are disclosed, as the instant specification is silent to unexpected results, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use any known temperature sensor in the apparatus of Yamauchi et al. or Autenrieth et al. or Okada et al., for example a thermometer, as doing so would amount to nothing more than use of a known material for its intended use in a known environment to accomplish entirely expected result.

Regarding limitations recited in claim 3 which are directed to a manner of operating

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disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

14. Claim(s) 4 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamauchi et al. (USP 4,147,660) or Autenrieth et al. (EP 0 884 271) or Okada et al. (USP 5,302,470) in view of Cheng (USP 4,855,267).

Regarding claim 4, Yamauchi et al. or Autenrieth et al. or Okada et al. disclose all of the claim limitations as set forth above, but the references do not explicitly disclose said apparatus comprising a sensor for detecting a concentration of hydrogen gas. As it was known in the art at the time of the invention to use sensors for detecting a concentration of hydrogen gas for the purpose of determining when the catalyst activity decreases and the catalyst needs to be regenerated, as evidenced by Cheng (C2/L30-62), it would have been obvious to one having ordinary skill in the art at the time the invention was made to use said sensor in the apparatus disclosed by Yamauchi et al. or Autenrieth et al. or Okada et al. for the purpose of determining when the catalyst activity decreases and the catalyst needs to be regenerated.

Regarding limitations recited in claim 4 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

15. Claim(s) 5 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamauchi et al. (USP 4,147,660) in view of Okada et al. (USP 5,302,470).

Regarding claim 5, Yamauchi et al. discloses all of the claim limitations as set forth above. Additionally the reference discloses that sulfurous materials can deposit on the catalyst, therefore

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lowering catalyst activity (C1/L39-55), but the reference does not explicitly disclose said apparatus comprising a desulfurizer for removing a sulfide from raw materials.

With respect to Okada et al. the same comments apply as set forth above.

Regarding limitations recited in claim 5 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

16. Claim(s) 2 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. (USP 5,302,470) in view of Autenrieth et al. (EP 0 884 271).

Regarding claim 2, Okada et al. discloses all of the claim limitations as set forth above. Additionally the reference discloses that the catalyst needs to be regenerated (C3/L17-C4/L30), but the reference does not disclose any specific means for catalyst regeneration. As it was known in the art at the time of the invention to use recovering gas supply unit for supplying an inert gas or water vapor to said reforming unit for the purpose of catalyst regeneration, as evidenced by Autenrieth et al. (C3/L27-33), it would have been obvious to one having ordinary skill in the art at the time the invention was made to use said recovering gas supply unit for supplying an inert gas or water vapor to said reforming unit disclosed by Autenrieth et al. in the apparatus of Okada et al. for the purpose of catalyst regeneration.

Regarding limitations recited in claim 2 which are directed to a manner of operating disclosed apparatus, the examiner notes that neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim. Said limitations do not differentiate apparatus claims from prior art. See MPEP § 2114 and 2115.

17. This application currently names joint inventors. In considering patentability of the claims

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under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Conclusion

18. In view of the foregoing, none of the claims are allowed.


19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (703) 305-5418. The examiner can normally be reached on Monday through Thursday, from 8:30 AM to 7:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (703) 308-6824.

The fax phone number for Group 1700 is (703) 872-9311 (for Official papers after Final), (703) 872-9310 (for other Official papers) and (703) 305-6078 (for Unofficial papers). When filing a fax in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley
Examiner
Art Unit 1764


JERRY D. JOHNSON
PRIMARY EXAMINER
GROUP 1100

BR
April 18, 2003